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I, LEANNE MYNOTT, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PP 6419 for a patent by CANON KABUSHIKI KAISHA filed on 08 October 1998.

I further certify that pursuant to the provisions of Section 38(1) of the Patents Act 1990 a complete specification was filed on 07 October 1999 and it is an associated Application to Provisional Applications Nos. PP 6419, PQ 0289, PQ 0290 and PQ 1852 and has been allocated No. 53527/99

WITNESS my hand this
Twenty-eighth day of October 1999

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A handwritten signature in cursive script, appearing to read "L. Mynott".

LEANNE MYNOTT
TEAM LEADER EXAMINATION
SUPPORT AND SALES

ORIGINAL

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PROVISIONAL SPECIFICATION FOR THE INVENTION ENTITLED:

Control Template, Methods of Production
and Use Thereof, and Associated Controller

Name and Address
of Applicant: Canon Kabushiki Kaisha, Incorporated in Japan, of 30-2,
Shimomaruko 3-chome, Ohta-ku, Tokyo, 146, JAPAN

Name of Inventor(s): Seppo Reino Keronen, Sue-Ken Yap and
Philip Keith Robertson

This invention is best described in the following statement:

CONTROL TEMPLATE, METHODS OF PRODUCTION AND USE THEREOF, AND ASSOCIATED CONTROLLER

Field of the Invention

5 The present invention relates to a control template for use with a related control device, as well as methods of production and use of such a control template.

 The invention has been developed primarily for use with remote control systems, automatic tellers and video game controllers, and will be described hereinafter with reference to these and other applications. However, it will be appreciated,
10 particularly in view of the large number of alternative examples given, that the invention is not limited to these fields of use.

Background of the Invention

 Control pads of various types are known and used across a relatively wide
15 variety of fields. Typically, such pads include one or more keys, buttons or pressure responsive areas which upon application of suitable pressure by a user, generate a signal which is supplied to associated control circuitry.

 Unfortunately, prior art control pads are somewhat limited, in that they only allow for a single configuration of keys, buttons or pressure sensitive areas. Standard
20 layouts rarely exist in a given field, and so a user is frequently compelled to learn a new layout with each control pad they use. For example many automatic teller machines ("ATMs") and electronic funds transfer at point of sale ("EFTPOS") devices use different layouts, notwithstanding their relatively similar data entry requirements. This can be potentially confusing for a user who must figure out for each control pad
25 the location of buttons required to be depressed. The problem is exacerbated by the fact that such control pads frequently offer more options than the user is interested in, or even able to use.

 Overlay templates for computer keyboards and the like are known. However they are relatively inflexible in design terms and require a user to correctly

configure the system with which the keyboard is associated each time the overlay template is to be used.

It is an object of the present invention to overcome or at least substantially ameliorate one or more of the disadvantages of the prior art.

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Summary of the Invention

Accordingly, in a first aspect, the invention provides a control template for use with a controller having a control template receptacle, a data reader, a viewing area and sensor means, the control template including:

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a laminar substrate;

control indicia on at least one face of the laminar substrate; and

storage means for storing mapping data associated with the control indicia;

wherein, upon insertion of the control template into the control template receptacle such that at least some of the control indicia are visible in the viewing area, the data reader can read mapping data from the storage means and, on the basis of the mapping data, the sensor means can detect selection of one or more of the control indicia in the viewing area.

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In a second aspect, the invention provides a control template for use with a controller having a control template receptacle, a data reader, a viewing area and sensor means, the control template including:

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a laminar substrate;

control indicia on at least one face of the laminar substrate; and

storage means for storing address data for retrieving mapping data associated with the control indicia;

25

wherein, upon insertion of the control template into the control template receptacle such that at least some of the control indicia are visible in the viewing area, the data reader can read the address data from the storage means, retrieve the mapping data from a location indicated by the address data, and, on the basis of the mapping

data, the sensor means can detect selection of one or more of the control indicia in the viewing area.

Preferably, the address data includes a network address for accessing a remote network site through which the mapping data can be retrieved.

5 Preferably, the control indicia are disposed on a separate substrate mounted on the laminar substrate, most preferably adhesively bonded thereto.

In a third aspect, the invention provides a controller for use with the control template of any one of paragraphs, the controller including:

a housing;

10 a control template receptacle formed in said housing for receiving the control template;

data reading means for reading the data in the storage means upon insertion of the control template into the control template receptacle;

15 a viewing area for viewing one or more of the control indicia when the control template is inserted into the control template receptacle; and

sensor means for detecting selection of one or more of the control indicia in the viewing area on the basis of the mapping data.

Preferably, the sensor means takes the form of a transparent or semi-transparent pressure sensing pad extending at least partly across the viewing area, such that, when the control template is positioned within the control template receptacle, at least some of the control indicia are visible through the pressure sensing pad and the viewing area.

20 Preferably, the pressure sensing pad includes an associated display screen, which preferably can selectively be made opaque or partly opaque, thereby to hide or emphasise one or more of the control indicia, or to provide text or graphical information to a user of the controller.

In a fifth aspect, the invention provides a method of producing a control template having control indicia and associated data recorded thereon, the method including the steps of:

providing a laminar substrate;
providing a control indicia layout;
overlaying the control indicia layout onto a face of the laminar substrate;
determining data associated with control functions represented by the control
5 indicia and the relative positions and extents of the control indicia with respect to the
face of the laminar substrate; and
storing the data in storage means on or in the laminar substrate;
wherein the steps can be performed in any suitable order.

10 **Brief Description of the Drawings**

Preferred embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a controller and associated control template, each according to the invention;

15 Figure 2 is a perspective view of an opposite side of the control template shown in Figure 1;

Figures 3, and 4 are inverted plan views of alternative embodiments of the control template shown in Figure 1;

Figures 5 to 7 are plan views of alternative embodiments of the control
20 template shown in Figure 1;

Figure 8 is a side view of another embodiment of the invention shown in Figure 1;

Figures 9a and 9b are a longitudinal section view and a perspective view respectively of another embodiment of the control template shown in Figure 1;

25 Figures 10a and 10b are a longitudinal section view and a perspective view respectively of an alternative embodiment of the control template shown in Figures 6a and 6b;

Figures 11 to 14 are alternative embodiments of the control template shown in Figure 1;

Figure 15 is a longitudinal sectional view of a pressure sensitive membrane and associated LCD layer for use with a preferred embodiment; and

Figures 16 to 20 show various stages in the use of a control template with the arrangement shown in Figure 15.

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Detailed Description of Embodiments

Referring to Figure 1, there is provided a controller 1, having a housing 2 which defines a control template receptacle 4 and a viewing area 6. Data reading means are provided in the form of exposed contacts 7 and associated control circuitry (not shown). The controller 1 also includes sensor means in the form of a substantially transparent pressure sensitive membrane 8 covering the viewing area 6.

The controller 1 is configured for use with a control template, which, in the embodiment shown in Figures 1 to 3, takes the form of a smart card 10. The smart card 10 includes a laminar substrate 12 with control indicia in the form of a four way directional controller 20, "jump" button 22 and "kick" button 24 printed on an upper face 16 thereof. Other non-control indicia, such as promotional or instructional material, can be printed alongside the control indicia (for example, advertising material 26 on smart card 10) or on a reverse face 27 of the card (Figure 2).

The smart card 10 includes storage means in the form of an on-board memory chip 19 (Figure 8) for storing mapping data associated with the control indicia. The smart card 10 also includes data contacts 18 connected to the on-board memory chip 19 corresponding with the exposed contacts 7 on the controller 1.

In use, the smart card 10 is inserted into the control template receptacle 4, such that the pressure sensitive membrane 8 covers the upper face 16 of the smart card 10. The control indicia are visible within the viewing area 6 through the transparent pressure sensitive membrane 8.

The exposed contacts 7 and associated circuitry are configured to read the mapping data associated with the control indicia from the memory chip 19, either automatically upon insertion of the smart card 10 into the control template receptacle 4,

or selectively in response to a signal from the controller 1. This signal can, for example, be transmitted to the smart card 10 via the exposed contacts 7 and data contacts 18.

Once the mapping data associated with the control indicia 14 has been read, a
5 user can press areas of the pressure sensitive membrane 8 on or adjacent the underlying control indicia. By sensing the pressure on the pressure sensitive membrane 8 and referring to the mapping data, the controller 1 can deduce which of the control indicia the user has pressed. For example, if the user places pressure on the pressure sensitive membrane 8 adjacent the "kick" button 24, the controller 1 will assess the position at
10 which the pressure was applied, refer to the mapping data, and determine that the "kick" button 24 was selected. This information can then be used to control a game running on an associated video game console (not shown).

In a preferred form, the controller includes a transmitter (not shown), such as an infra-red (IR) transmitter or radio frequency (RF) transmitter, for transmitting
15 information in relation to buttons selected by the user. In the embodiment of the controller 1 shown in Figure 1, an IR transmitter having an IR light emitting diode (LED) 25 is provided. Upon selection of one of the control indicia, the controller 1 causes information related to the selection to be transmitted to a remote video console (not shown) where a corresponding IR receiver detects and decodes the information for
20 use in controlling a game being played.

Any suitable transmission method can be used to communicate information from the controller 1 to the remote video game console, including direct hard-wiring. Moreover, the video console itself can incorporate a transmitter, and the controller 1 a receiver, for communication in an opposite direction to that already described. The
25 communication from the video game console to the controller 1 can include, for example, handshaking data, setup information, or any other form of information desired to be transferred from the video game console to the controller 1.

Turning to Figure 3, there is shown an alternative embodiment of the control template shown in Figures 1 and 2, taking the form of a control card 30. The control

card 30 still includes a laminar substrate 12 which bears control indicia. However, the storage means in this embodiment takes the form of a magnetic strip 26 formed along an edge 28 of the reverse face 27 of the control card. The mapping data is stored on the magnetic strip 26 in a conventional manner. A corresponding controller (not shown) for this embodiment includes a magnetic read head positioned at or adjacent an entrance to the corresponding control template receptacle. As the control card 30 is slid into the control receptacle, the mapping data is automatically read from the magnetic strip 26 by the magnetic read head. The controller is then operated as described in relation to the Figure 1 embodiment.

Figure 4 shows another embodiment of a control template in the form of a control card 34, in which the storage means takes the form of machine readable indicia. In the embodiment shown, the machine readable indicia takes the form of a barcode 36 formed along an edge 38 of the reverse face 27 of the card 34. The mapping data is suitably encoded, and then printed in the position shown. A corresponding controller (not shown) for this embodiment includes an optical read head positioned at or adjacent an entrance to the associated control template receptacle. As the card 34 is slid into the control receptacle, the mapping data is automatically read from the barcode 36 by the optical read head. Alternatively, the barcode can be scanned using a barcode reader associated with the controller immediately prior to inserting the control template, or scanned by an internal barcode reader scanner once the control template has completely been inserted. The control template is then operated as described in relation to the Figure 1 embodiment. It will be appreciated that the position, orientation and encoding of the barcode can be altered to suit a particular application. Moreover, any other form of machine readable indicia can be used, including embossed machine-readable figures, printed alpha-numeric characters, punched or otherwise formed cut outs or even optical or magneto optical indicia.

Various alternative embodiments of the control template are shown in Figures 5, 6 and 7. Figure 5, for example, shows an arrangement of control indicia on a control card 39 for use in controlling a video recorder. The control indicia includes

"Fast Forward" 40, "Rewind" 42, "Play" 44, "Stop" 46 and "Pause" 48 buttons. Advertising material 50 is printed above the control indicia. Depending upon the mode in which the control card 39 is designed to operate, the advertising material 50 can simply be a passive indicator of the control card's intended use. By using the control
5 card 39 with a suitable remote control, manipulating the various video controls printed on the card will result in playback of a video corresponding to the advertising material 50. For example, if the advertising material 50 relates to a movie, manipulating the controls will playback and otherwise control that particular movie through a video reproduction apparatus (not shown). In this embodiment, the card can be supplied with
10 a bought or rented video movie. Alternatively, the movie can be accessed from a cable, satellite or other pay-per-view television arrangement. In the latter case, distribution of the card as a marketing tool can increase viewer interest in particular movies. It will be appreciated that this embodiment can be adapted for any pay-per-use arrangement

15 Alternatively, the control indicia can be used to control a video reproduction apparatus in a known way. For example, pressing "Play" 44 results in the replay of whichever movie is presently loaded into a playback device (not shown) associated with the controller. In this mode, the advertising material 50 can represent a passive marketing image having no relationship to the controls themselves or the video to be
20 replayed and otherwise manipulated by the control indicia.

Alternatively, the storage means associated with the control template can store mapping data associated with the advertising material 50. By "pressing" the pressure sensitive membrane 8 on or adjacent the advertising material 50, a user can instigate playback on a video reproduction device of marketing imagery associated with the
25 advertising material 50. For example, in one embodiment, the advertising material 50 is related to a movie 'A', and is bundled with a recorded video medium such as a video cassette or DVD containing a movie 'B'. Once the recorded video medium is positioned within a suitable playback device, the control template is inserted into its associated controller. Upon pressing "Play" 44, Movie 'B' is played back through the

5 playback device. Playback is controlled using the various control indicia on the card. However, at any time, pressing the advertising material 50 causes a preview of movie 'B' to be played via the playback device. It will be appreciated that the preview of movie 'B' is actually stored on the same recorded video medium as movie 'A', and that the advertising material simply represents a link thereto. It will also be appreciated that in alternative embodiments the recorded advertising material can be stored on the control card 39 itself, or even in remote storage facilities, accessible via the video playback device. In one embodiment, the remote storage facilities are accessible via a computer network, such as the internet.

10 Figure 6 shows an alternative control template, which is approximately the size of a magazine. The control template in this embodiment represents a magazine 49, the contents of which can be "browsed" using the control indicia. Along with the mapping data, the storage means includes magazine content data such as text, images, and multimedia content such as sound, video and animation. Various icons 51 link with
15 corresponding portions of magazine data, which, when selected, are reproduced via associated playback equipment (not shown). As with the previous embodiment, some or all of the magazine content can be stored in a remote location accessible via a communications or computer network, such as the internet. In this case, it will be usual for the control card 49 to incorporate security access features, which allow the
20 user of the control card 49 to access the required material whilst preventing general access via an unauthorised internet browser or the like. This ensures that the person accessing the material has the right to access the data by having purchased or otherwise legitimately obtained the requisite control card 49.

25 Turning to Figure 7, there is shown an alternative embodiment control template in the form of a table of contents card 52. The table of contents card 52 is relatively larger than the smart card embodiments of Figures 1, 2 and 3, and is a summary card for a virtual photo album, or for a series of photographs or images stored on the card, in a remote storage location or on an image storage medium such as a CD-ROM or DVD disc. The summary appears as a series of thumbnails 54

representing larger, higher resolution versions of the photographs or images. By positioning the table of contents card 52 into a suitable control template receptacle (not shown) associated with a display device (not shown) for the photographs or images, pressing any one of the thumbnails 54 results in the larger, higher resolution version of the image or photograph being displayed.

In one embodiment, the table of contents card is supplied when a user deposits photographic film for development. Once the film is developed, the resultant images are digitised and stored on a digital storage medium, such as a CD-ROM or DVD disc. A corresponding table of contents card 52 is then generated and given to the user with the digital storage medium. Alternatively, the digitised images can be stored at a remote site, for access by the user via a computer network such as the internet. In this case, the user is simply supplied with the table of contents 52, which is taken home and inserted into a suitable receptacle. Selecting a particular thumbnail causes the corresponding high resolution image to be downloaded to an associated display device for viewing by the user.

In other embodiments, each thumbnail 54 represents a sequence of images, or a particular point in a series of sequential video frames. An example of where this might be used is in a video camera (not shown), wherein the first frame of each take is automatically recorded for later review. By producing a table of contents card 52 with each of the takes on it, a director or editor can quickly move between different takes without having to use cumbersome manual fastforward or rewind buttons. In this embodiment, it is necessary for the storage means associated with the table of contents 52 to store mapping data associated with each of the thumbnails, and relationship data linking each thumbnail with its corresponding image or sequence of images.

Turning to Figure 8, there is shown a side view of a control template 55. In this embodiment, the control template is a smart card 56 having contacts 58 for communication with a controller (not shown). An adhesive label 60 has printed upon it a number of control indicia 64 and is affixed to the laminar substrate 62. By using this arrangement, a home user can print a suitable label for use with a particular control

template by using a printer, such as a colour bubble jet printer manufactured by Canon, Inc.

Turning to Figures 9A and 9B, in an alternative embodiment, the invention includes an embossed upper face 66. In the embodiments shown, the embossing takes the form of a number of raised areas 68 which provide a user with tactile feedback. Figures 10A and 10B show an alternative embodiment of the control template shown in 9A, in which the embossed upper face 66 includes braille characters 70, which enables visually impaired persons to more easily discern the available control indicia. In these embodiments, the sensitivity and flexibility of the pressure sensitive membrane must be such that a user can press hard enough on the raised areas to discern their positions or read the braille they encode, without registering as selection of the associated indicium. Alternatively, the controller can be configured to only detect, say, two applications of pressure in quick succession, thereby allowing a user to slide his or her finger across the pressure sensitive membrane to detect or read the raised areas and braille characteristics respectively.

In each of the embodiments above, the mapping data takes the form of coordinate information corresponding with the various indicia. Where an indicium is irregularly shaped, a rectangular or other shaped bounding box can be used to reduce the amount of mapping required. Such a bounding box need not fully bound the particular indicium, and can be wholly or partially contained therein, depending upon the available space.

Where the storage means are relatively small in size, particularly where machine readable printed indicia is used, it is preferable to store the mapping data at a remote location, and access it as required. For example, mapping data for a given control template can be stored on a computer accessible via the internet (or other computer network). The storage means associated with the control template stores only an address of an internet computer location, the address being read by the controller upon insertion of the control template. The controller then accesses the internet and

obtains the requisite mapping data for use in interpreting a user's selections via relation to the inserted control template via the pressure sensitive membrane.

For security reasons, it is preferable that the site not be accessible without the user entering an identification code of some type, preferably via the control template and pressure sensitive membrane. The security code itself can either be stored in the
5 storage means in a secure manner, or on the internet site. In the latter case, obtaining access to the site via the control template is achieved by effectively logging onto that site via a password system.

The use of remotely stored mapping data allows the use of smaller storage
10 means, and also allows users to customise their own cards and store the mapping data on an internet site, without the need for smart card readers and writers.

The control indicia layouts themselves can be generated in any number of ways. For example, in one embodiment, a user can purchase a control template such as a smart card having a preprinted layout and associated mapping data pre-stored in the
15 storage means. Alternatively, a user can design a layout for use with a particular controller or set of controllers using suitable software. The software includes linking means for linking the position and spatial extent of an indicium selected by a user with a particular function. For example, if the user wishes to choose, say, a picture of a beetle as a "Play" button for a video recorder, the software can determine the spatial
20 extent of the beetle, its relative position on the control template, and link this information to the "play" command. The software can include a plurality of different icons and images for use as control indicia, and can also be used to import images or icons from other sources, such as scanners or graphics manipulation packages.

In some cases, it is desirable to have relatively broad categories of instruction
25 to which the various indicia can be linked. For example, the command "Play" can be used in a number of applications, such as video recorders or CD players. However, in other cases, it is preferable to more specifically limit the command linked to a particular indicium. For example, the "Play" command can be subdivided into "Play CD", "Play Video", or even "Play [model number]" for a specific make or model of

appliance or apparatus. Specifying the make or model ensures that there is no ambiguity where a single controller is used for more than one system or where the command "Play" can be applied to more than one situation intended to be controlled by the controller. However, the use of specific commands for corresponding
5 manufacturers or models can also be used to prevent use of a control template designed for use with a particular model or manufacturer with other models or other manufacturer's products.

In an embodiment not shown, a printer is provided with an in-built smart card reader/writer. In this way, a smart card can be printed with the control indicia and
10 programmed with the mapping (and other) data, using an associated computer. In a particularly preferred embodiment, there is provided a smart card writer with the printer, configured such that a smart card is printed and written to automatically. For example, the control indicia can first be printed onto an upper face of the card, and then the mapping data can be uploaded from the smart card writer to the smart card.

15 Figure 10 shows a control template for use with, in this case, a printer, although a similar arrangement could be implemented on other electronic apparatus. In the embodiment shown, the control template includes a "Buy More Ink" indicium 55, an "Instructions" indicium 57 and a "Service Call" indicium 59. The "Buy More Ink" indicium 55, when pressed, sends a request via the internet, or other communications
20 network, to an ink supplier. In the preferred form, the request for more ink also forwards details such as the make and model of the printer, the type of ink required, the address and location of the printer within an organisation, and "bill to" data enabling an invoice to be generated.

The "Instructions" 57 indicium calls up an instructions menu on an associated
25 visual display device, or, in the case that the printer is connected to a nearby computer, on a video display associated with that computer.

Finally, the "Service Call" indicium 59 generates a request for service which, again, is sent via the internet or a communications network to an appropriate location. The service call preferably includes data such as the printer's make and model, the

address at which the printer is located and its specific floor location at that address, and a code corresponding to the printer's self-diagnosed problem.

It will be appreciated that other appliances can have different indicium for correspondingly different purposes related to the specific needs thereof.

5 Turning to Figure 11, there is shown a control template 61 designed for use as a personal address book. The control template 61 in this case includes a number of contact icons 63, each of which is linked to telephone, address, e-mail and other personal data associated with the person pictured in that icon. By inserting the control template into a controller associated with a suitable telephone or computer, selection of
10 a given contact icon will enable communication with the corresponding person by any selected means. For example, if a computer is being used, selection of the icon will open an e-mail client program and insert the e-mail address of the intended recipient, thereby enabling the user simply to type in the e-mail message and send it. Alternatively, in the case of a telephone, pressing the icon will automatically cause the
15 telephone to ring a default number associated with that contact. Where a number of telephone numbers, such as work, home and mobile telephone numbers, are available, selection of a contact icon 61 will cause a menu to be displayed on a visual display associated with the telephone, offering a choice of work, home or mobile calling. The user selects the desired option, and the number is automatically called. As with
20 previous embodiments, the contact data can be stored in or on the control template itself, or can be remotely stored for access via, say, the internet. Similarly, the mapping data linking the spatial extent of each icon can remotely be stored.

Figure 12 shows a control template 65 configured for use as a catalogue or advertising brochure, which can be delivered to post boxes, or distributed with
25 magazines, videos or the like. By sliding the control template 65 into a control template receptacle in a suitable controller, the various control indicia in the form of control icons 67 can be selected. Each of the control icons 67 is associated with a particular product, and pressing that icon results in information on the associated product being displayed on an associated display screen. Additionally, if the user is

interested in a displayed product, an option can be provided whereby the user automatically orders the product once selected. Where the brochure is used with a home computer system, the home computer system can be programmed with data required to effect a transaction, such as credit card details and expiry date, personal
5 details, and the address to which to send the product. Of course, suitable security can be implemented requiring a user to enter a password before the various details are forwarded from the computer system. As with previous embodiments, the information can be sent via a communications network such as the internet.

In Figure 13, there is shown a control template in the form of a tourist
10 information map 70 having a plurality of areas of interest 72 highlighted. Upon inserting the tourist map 70 into a suitable control template receptacle associated with a corresponding controller (not shown), a user is able to select any one of the areas of interest 72 for which further information is required. This information can be displayed on a associated display device, or sent to a printing device for generation of a
15 hard copy.

Figures 15 to 20 show various configurations of an alternative preferred embodiment of the invention as applied to an automatic teller machine data entry pad. As shown in Figure 15, a substantially transparent liquid crystal display (LCD) 80 overlies the pressure sensitive membrane 8, such that a user can still see through both
20 layers. In this embodiment, the control template takes the form of an enlarged smart card 82 having on-board storage means (not shown) in the form of non-volatile memory. As with previous smart card embodiments, contacts (not shown) are also provided to allow the control template to communicate mapping data from the storage means to the associated controller, which in this case is an automatic teller machine.

25 The LCD is an array of liquid crystal cells, each of which can selectively be turned "on" or "off". When a cell is "on", it allows substantially no light to pass and is therefore effectively opaque. When turned "off", the cell is substantially transparent to visible light. In other embodiments, the LCD can be replaced by any form of display which is relatively thin and substantially transparent. Accordingly, thin film transistor

(TFT) displays and the like, whether monochrome or colour, can be used without departing from the spirit and scope of the invention. Similarly, the display can be placed above or below the pressure sensitive membrane, depending upon the preferred implementation and manufacturing considerations.

5 In use, the smart card 82 is inserted into a suitable receptacle associated with the ATM. Once the smart card 82 is in position, the LCD 80 is activated to block out all but the keypad 81 and confirm buttons, as shown in Figure 16. An associated screen 84 tells the user that the ATM is expecting a personal identification number (PIN) to be entered, followed by the "confirm" button (represented by a "tick"). Once
10 the user enters the required pin and presses confirm, the LCD 80 is changed to the configuration shown in Figure 17, wherein the "transfer" button 86, "account balance" button 88 and "withdraw" button 90 are displayed. The screen 84 prompts the user to select a desired action. In this case, the user selects withdraw button 90.

Once withdraw button 90 has been selected, the LCD changes again, to
15 provide the configuration shown in Figure 18. The three buttons displayed are the "savings" button 92, "cheque" button 94 and "credit" button 96, and the screen 84 prompts the user to select an account. In this case, the user elects to withdraw money from the savings account and does so by pressing the "savings" button 92. Once the account has been selected, the LCD 80 is again configured as shown in Figure 16, for
20 the user to enter the amount to be withdrawn. In this case, the screen 84 prompts the user to enter the amount of money required to be withdrawn.

Once the user has entered the required amount and pressed confirm, the configuration of the LCD 80 is changed to that shown in Figure 19. The screen 84 prompts the user to confirm, cancel or withdraw. If the user presses cancel (the "X"
25 button), the transaction is ended and the template can be removed from the receptacle. If "correction" is selected, the LCD 80 will return to the previous configuration, allowing the user to enter the correct amount to be withdrawn.

Once the confirm button has been entered, the ATM processes the requested transaction, and issues the required money through a suitable outlet (not shown).

It will be appreciated that this embodiment can be applied to any situation in which a number of sequential steps need to be taken to complete a transaction. At each step, the LCD is configured to allow access only to available options, whilst blocking unavailable options.

5 A number of modifications of this embodiment are also available. For example, in one alternative embodiment, the LCD can be configured to emphasise one or more available indicia, on the basis that those indicia are the most likely to be of interest to a user at a current stage of a transaction.

 The emphasis can take any suitable form, including the use of a bounding box,
10 flashing indicators or even animated arrows pointing to an emphasised indicium. In other embodiments, the LCD 80 provides other graphics images, including advertising or instructions such as those shown on screen 84. In one embodiment, one or more of the indicia is captioned with text or some other symbol to explain its purpose. For example, if a beetle image is used as a "play" button, as described in an embodiment
15 above, the word "play" can be positioned over or adjacent the beetle by means of the LCD 80. It will be appreciated that the area surrounding the beetle needs to be of an appropriate colour to enable the LCD text to be visible. However, the background colour can also be included as part of the mapping data, thereby enabling the embodiment to only display text where it will be visible. In the case of a colour LCD
20 or other display medium, suitable contrasting colours can be selected on the basis of the background colour, or even of the indicia themselves.

 Another alternative embodiment is shown in Fig. 20, in which the screen 84 is superimposed over a relatively blank area of the smart card 82. The various messages are displayed by means of the LCD 80, and be scrolled across the smart card 82 when
25 the message is too long to be displayed at once.

 The embodiments above have been concerned mainly with the use of a pressure sensitive membrane positioned in a viewing area of a controller. However, it will be appreciated that any other form of sensing means capable of providing an indication of a user's selection can also be used. Non-limiting examples of these

include capacitive or ultrasonic sensors, laser tracking systems, heat sensors or chemical detectors. It will also be appreciated that, where a pressure sensitive membrane is used, the pressure sensitivity can either be interpreted as a simple binary threshold, or as a multi-level or even substantially continuous pressure input. In one
5 embodiment, the software which drives the pressure sensitive membrane allows a user to slide a finger across the surface of the membrane to indicate an increase or decrease in a value. For example, if a user drags a finger across the pressure sensitive membrane from left to right, this can be interpreted as an increase in, say, volume for a television remote control.

10 Although the invention has been described with reference to a number of specific examples, it will be appreciated by those skilled in the art that the invention can be embodied in many other forms.

The claims defining the invention are as follows:

1. A control template for use with a controller having a control template
receptacle, a data reader, a viewing area and sensor means, the control template
5 including:
 a laminar substrate;
 control indicia on at least one face of the laminar substrate; and
 storage means for storing mapping data associated with the control indicia;
 wherein, upon insertion of the control template into the control template
10 receptacle such that at least some of the control indicia are visible in the viewing area,
the data reader can read mapping data from the storage means and, on the basis of the
mapping data, the sensor means can detect selection of one or more of the control
indicia in the viewing area.
- 15 2. A control template for use with a controller having a control template
receptacle, a data reader, a viewing area and sensor means, the control template
including:
 a laminar substrate;
 control indicia on at least one face of the laminar substrate; and
20 storage means for storing address data for retrieving mapping data associated
with the control indicia;
 wherein, upon insertion of the control template into the control template
receptacle such that at least some of the control indicia are visible in the viewing area,
the data reader can read the address data from the storage means, retrieve the mapping
25 data from a location indicated by the address data, and, on the basis of the mapping
data, the sensor means can detect selection of one or more of the control indicia in the
viewing area.

3. A control template according to paragraph 2, wherein the address data includes a network address for accessing a remote network site through which the mapping data can be retrieved.

5 4. A control template according to paragraph 2 or 3, wherein the location indicated by the address data contains a pointer to another address through which the mapping data can be retrieved.

5. A control template according to any one of paragraphs 2 to 4, wherein
10 the address data includes an internet address.

6. A control template according to paragraph 5, wherein the internet address relates to a document accessible via the internet but editable only by an authorised person.

15

7. A control template according to any one of the preceding claims, further including identification data.

8. A control template according to paragraph 7, wherein the
20 identification data uniquely identifies the control template.

9. A control template according to paragraph 8, wherein the identification data identifies a user of the control template.

25 10. A control template according to any one of the preceding paragraphs, wherein the laminar substrate includes one or more textured areas.

11. A control template according to paragraph 10, wherein one or more of the control indicia are printed on or adjacent one or more of the textured areas.

12. A control template according to paragraph 10, wherein the textured areas define the control indicia.

5 13. A control template according to any one of paragraphs 10 to 12, wherein the textured areas include readable information.

14. A control template according to claim 13, wherein the readable information is Braille or some other form of readable information readable by visually
10 disadvantaged persons.

15. A control template according to any one of claims 10 to 14, wherein the textured areas are disposed on a texture substrate mounted on the laminar substrate.

15 16. A control template according to any one of the preceding claims, wherein the control indicia are disposed on a separate substrate mounted on the laminar substrate.

17. A control template according to claim 16, wherein the separate
20 substrate is adhesively bonded to the laminar substrate.

18. A control template according to claim 17, wherein the separate substrate includes a contact adhesive, by means of which it is adhesively bonded to the laminar substrate.

25 19. A control template according to any one of claims 16 to 18, wherein the control indicia were printed onto the separate substrate prior to its adhesion to the laminar substrate.

20. A control template according to claim 19, further including one or more executable files associated with the mapping data.

21. A control template according to claim 20, wherein at least one of the
5 executable files includes script such as Javascript (trade mark) or another generic programming schema.

22. A control template according to any one of the preceding claims,
further including a card display for displaying information about the card or its contents
10 to a user.

23 A controller for use with the control template of any one of paragraphs, the controller including:

a housing;

15 a control template receptacle formed in said housing for receiving the control template;

data reading means for reading the data in the storage means upon insertion of the control template into the control template receptacle;

20 a viewing area for viewing one or more of the control indicia when the control template is inserted into the control template receptacle; and

sensor means for detecting selection of one or more of the control indicia in the viewing area on the basis of the mapping data.

24. A controller according to claim 23, wherein the data reading means
25 includes mapping data reading means for reading mapping data directly from the storage means.

25. A controller according to claim 23 or 24, wherein the data reading means includes address data reading means for reading address data from the storage

means, the controller being configured to obtain the mapping data from a remote storage location.

26. A controller according to any one of claims 23 to 25, wherein the
5 receptacle is a slot configured to slidably receive the control template.

27. A controller according to any one of claims 23 to 26, wherein the viewing area is defined by a cut-out area formed in the receptacle.

10 28. A controller according to any one of claims 23 to 27, wherein the data reading means include a plurality of data and power contacts disposed within the receptacle to engage corresponding data and power points formed on the control template.

15 29. A controller according to any one of claims 23 to 27, wherein the data reading means includes an optical or magnetic scanner for reading optically or magnetically stored data on the control template.

20 30. A controller according to claim 29, wherein the optical or magnetic scanner is disposed adjacent an entrance of the control template receptacle such that the optically or magnetically stored data are read as the control template is inserted into the receptacle.

25 31. A controller according to any one of claims 23 to 30, wherein the sensor means takes the form of a transparent or semi-transparent pressure sensing pad extending at least partially across the viewing area, such that, when the control template is positioned within the control template receptacle, at least some of the control indicia are visible through the pressure sensing pad in the viewing area.

32. A controller according to claim 31, wherein the mapping data corresponds to coordinate positions of the control indicia relative to the pressure sensing pad.

5 33. A controller according to claim 31 or 32, wherein the pressure sensing pad can provide an indication of relative pressure applied to its surface.

34. A controller according to any one of claims 31 to 33, wherein the pressure sensing pad includes an associated display screen.

10

35. A controller according to claim 34, wherein the associated display screen overlays, underlays, or is integral with the pressure sensing pad, and is transparent or substantially transparent when not in use.

15

36. A controller according to claim 35, wherein portions of the display screen can selectively be made opaque or partially opaque, thereby to hide or emphasise one or more of the control indicia, or to provide text or graphical information to a user of the controller.

20

37. A controller according to any one of claims 23 to 36, further including output means for outputting selection data, the selection data being generated when one or more of the control indicia is selected.

25

38. A method of producing a control template having control indicia and associated data recorded thereon, the method including the steps of:

providing a laminar substrate;

providing a control indicia layout;

overlaying the control indicia layout onto a face of the laminar substrate;

determining data associated with control functions represented by the control indicia and the relative positions and extents of the control indicia with respect to the face of the laminar substrate; and

storing the data in storage means on or in the laminar substrate;

5 wherein the steps can be performed in any suitable order.

39. A method according to claim 38, further including the step of using a computer software package to design the control indicia layout.

10 40. A method according to claim 39, wherein the step of using a computer software package to design a control indicia layout includes the sub-step of using one or more predetermined layout templates as a basis for designing the control indicia layout.

41. A method according to any one of claims 38 to 40, wherein the step of
15 storing the data in storage means on or in the laminar substrate comprises printing the data in a readable form on the face of the laminar substrate, such that the printed data can mechanically, optically, electronically or magnetically be read.

42. A method according to any one of claims 38 to 40, wherein the step of
20 storing the data in storage means on or in the laminar substrate comprises printing the data encoded as a bar code readable by a suitable bar code reader.

DATED this Eighth Day of October 1998

Canon Kabushiki Kaisha

25 Patent Attorneys for the Applicant

SPRUSON & FERGUSON

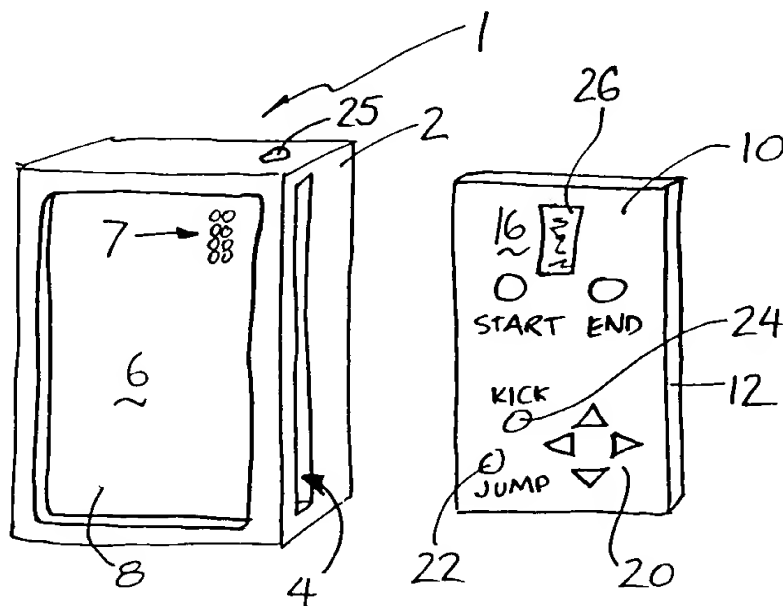


FIG 1

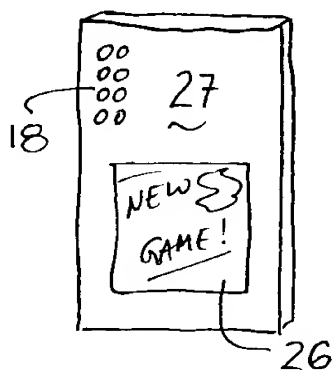


FIG 2

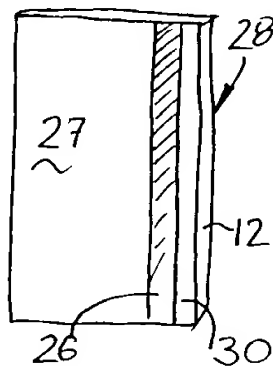


FIG 3

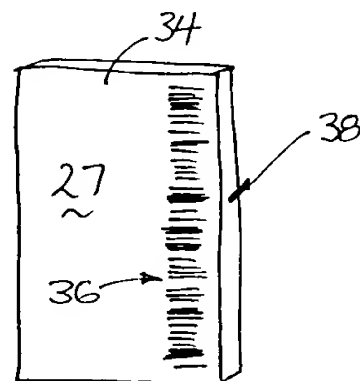


FIG 4

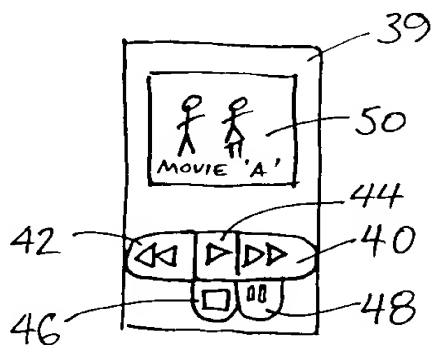


FIG 5

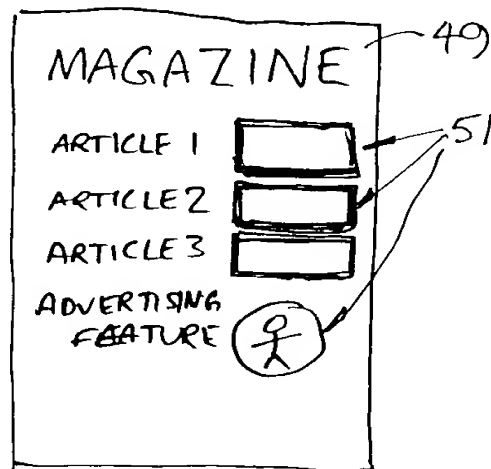


FIG 6

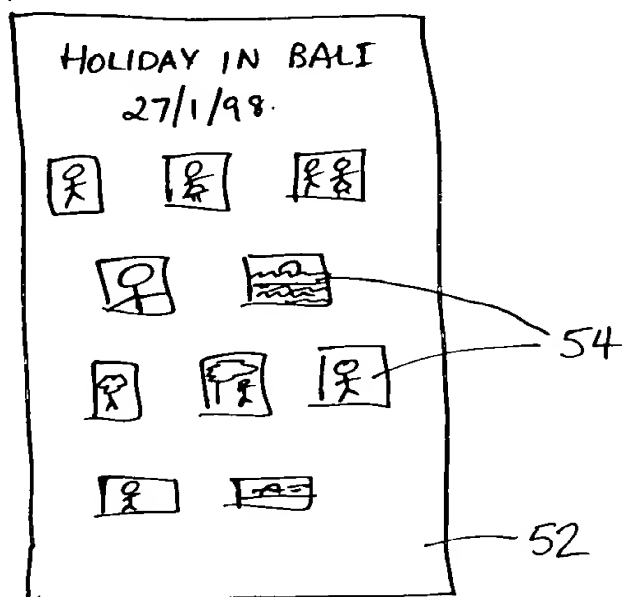


FIG 7

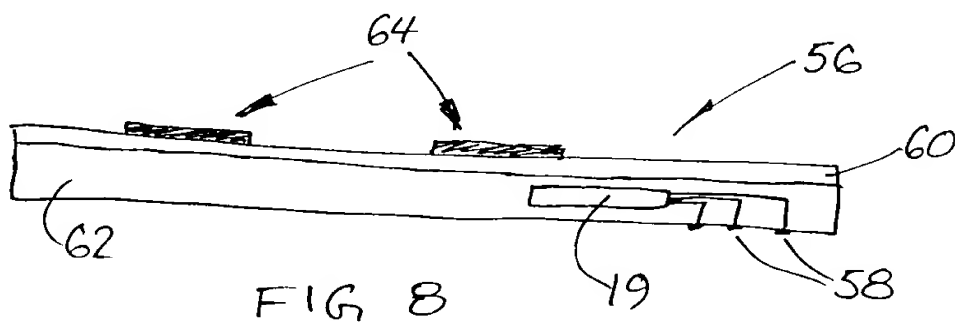


FIG 8

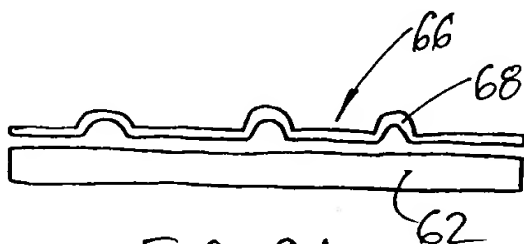


FIG 9A

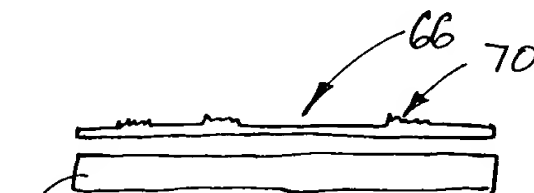


FIG 10A

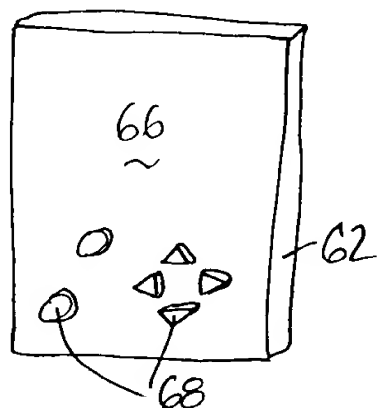


FIG 9B

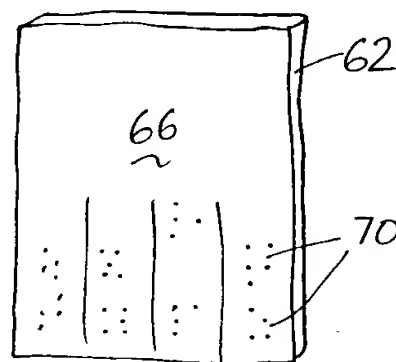


FIG 10B

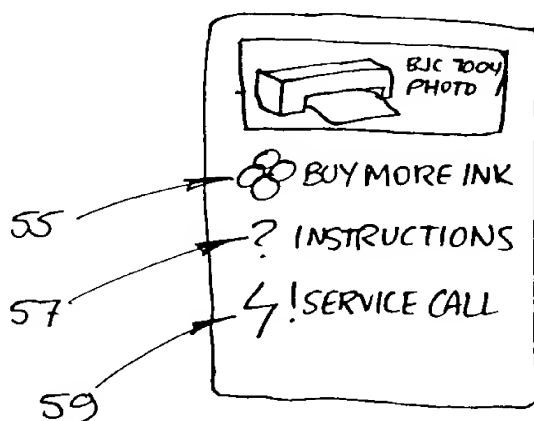


FIG 11

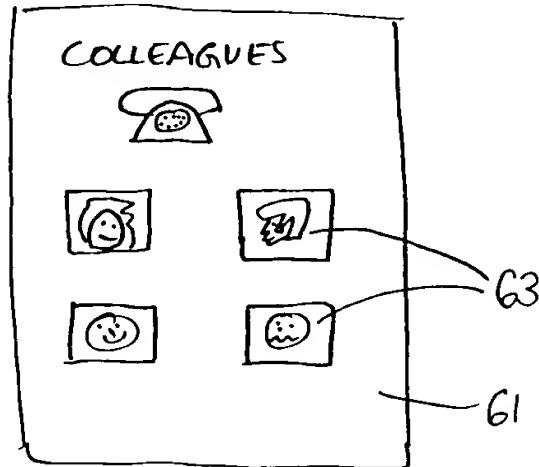


FIG 12

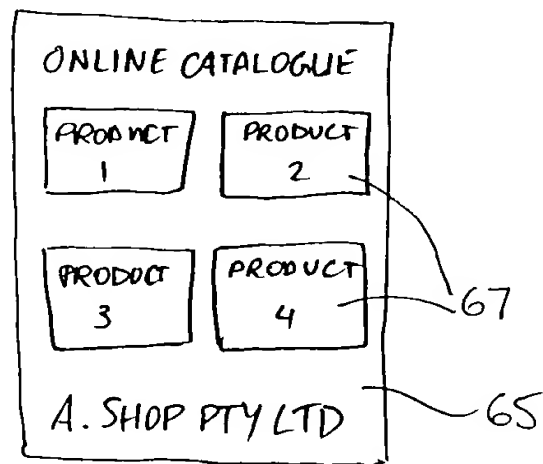


FIG 13

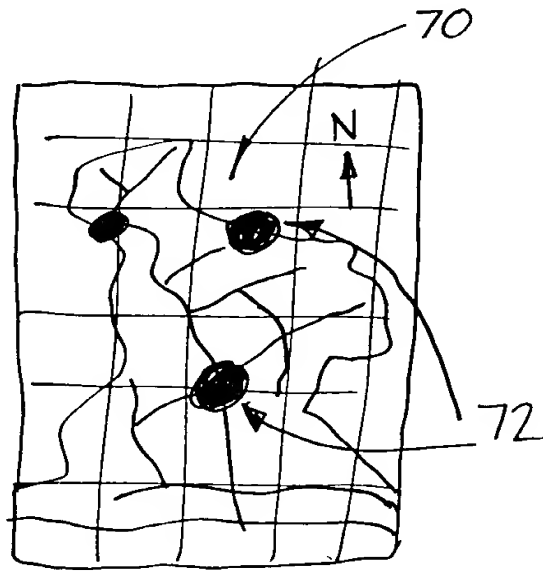


FIG 14

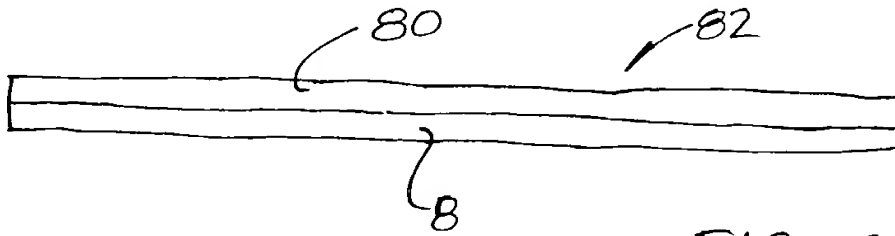


FIG 15

ENTER PIN, THEN PRESS ☒

84

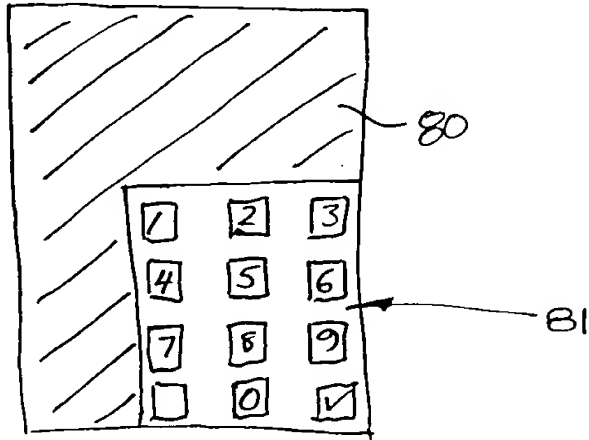


FIG 16

SELECT ACTION

84

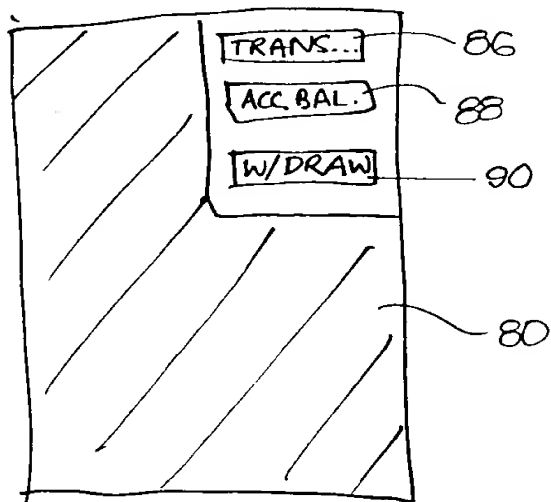


FIG 17

SELECT ACCOUNT

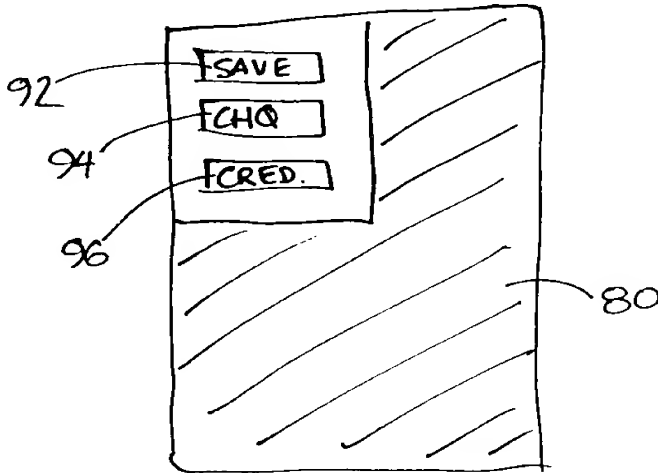


FIG 18

CONFIRM, CANCEL OR CORRECTION

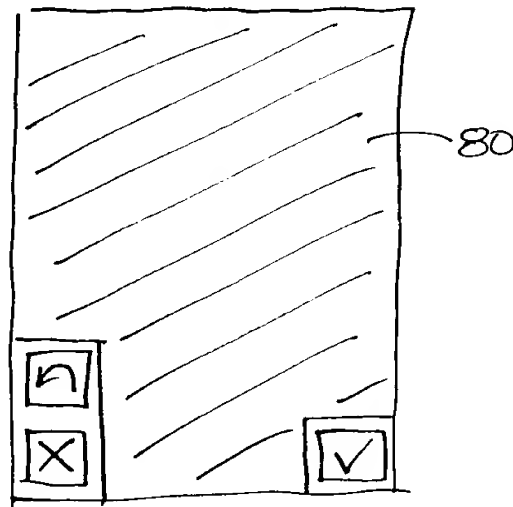


FIG 19

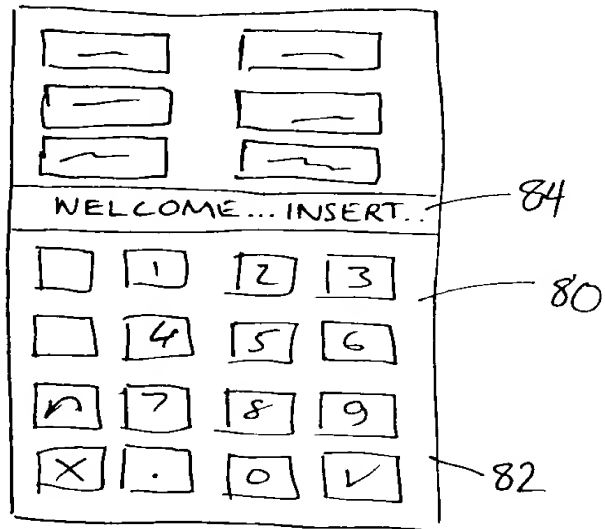


FIG 20